

CLAIMS

1. An optical pickup apparatus comprising:

an optical pickup including an optical pickup body having a substrate, a light source attached to said substrate, a light receiving element attached to said substrate and an optical member attached to said substrate, and an objective lens and a slider attached to said optical pickup body, wherein

said optical pickup is configured such that said slider is opposed to a recording face of an optical disk and said optical pickup is levitated along a thicknesswise direction of the optical disk by an air flow formed between said slider and the recording face,

said optical member is configured such that a light beam emitted from said light source is illuminated on the recording face through said objective lens and the reflected light beam reflected by the recording face is received by said light receiving element through said objective lens, and

said optical member is provided in a state wherein said optical member closely contacts with said light source, objective lens and light receiving element without a gap left therebetween.

2. The optical pickup apparatus according to claim

1 wherein, said optical member is in the form of a rectangular plate and is attached at one of two mutually opposing faces thereof to said substrate while said objective lens is attached to the other of the two mutually opposing faces of said optical member, and said light source is attached to a face of said optical member perpendicular to the one face and the other face.

3. The optical pickup apparatus according to claim 1 wherein, said light source is attached to said substrate, and a surface of said light source which is exposed to the outside while said light source is attached to said optical member is covered with anticorrosion means for blocking the surface from the external air.

4. The optical pickup apparatus according to claim 3, wherein said anticorrosion means is made of a synthetic resin material.

5. The optical pickup apparatus according to claim 3 wherein, said light source includes a light emitting element for emitting the light beam, a photo-detector for monitoring the light beam emitted from said light emitting element, and a mount member attached to said substrate and having said light emitting element and said photo-detector mounted thereon, that surfaces of said

light emitting element, photo-detector and mount member which are exposed to the outside while said mount member is attached at a lower face thereof to said substrate and the light emitting face of said light emitting element and a front face of said mount member are attached to said optical member are covered with said anticorrosion means, and that said anticorrosion means is formed from a transparent synthetic resin material through which the light beam emitted from said light emitting element can pass.

6. The optical pickup apparatus according to claim 5 wherein, connection terminals for inputting a driving signal are provided on said light emitting element while electric terminals for relaying the driving signal are provided on said substrate, and said connection terminals and said electric terminals are covered with said anticorrosion means.

7. The optical pickup apparatus according to claim 1 wherein, said objective lens is provided integrally with an objective lens plate, and said objective lens plate is attached at one face thereof to said optical pickup body while said slider is attached to the other face of said objective lens plate.

8. The optical pickup apparatus according to claim

1 wherein, said optical pickup apparatus comprises a resiliently deformable support plate in the form of a small-width plate having said optical pickup attached to an end in a longitudinal direction thereof, and said support plate has a thermal conductivity and a heat radiating property.

9. The optical pickup apparatus according to claim 8 wherein, said support plate has a heat radiating fin provided thereon in a projecting manner in a direction in which said radiating fin approaches the recording face.

10. The optical pickup apparatus according to claim 8 wherein, said support plate is made of a material of copper or iron which has copper plated thereon.

11. The optical pickup apparatus according to claim 8 wherein, said optical pickup apparatus further comprises a resiliently deformable load beam in the form of a small-width plate having said support plate attached to one end in a longitudinal direction thereof, and said load beam transmits and radiates heat from said light source rapidly.

12. The optical pickup apparatus according to claim 11 wherein, said load beam has a heat radiating fin provided in a projecting manner in a direction in which said load beam approaches the recording face.

13. The optical pickup apparatus according to claim 11 wherein, said load beam is made of a material of copper or iron which has copper plated thereon.

14. The optical pickup apparatus according to claim 11 wherein, a gap is formed between said support plate and said load beam and filled with grease for transmission of heat.

15. An optical disk apparatus comprising:

driving means for holding and driving an optical disk to rotate; and

an optical pickup apparatus for illuminating light on the optical disk driven to rotate by said driving section and detecting reflected light from the optical disk;

said optical pickup apparatus including:

an optical pickup having an optical pickup body having a substrate, a light source attached to said substrate, a light receiving element attached to said substrate and an optical member attached to said substrate, and an objective lens and a slider attached to said optical pickup body,

wherein said optical pickup being configured such that said slider is opposed to a recording face of an optical disk and said optical pickup is levitated along a

thicknesswise direction of the optical disk by an air flow formed between said slider and the recoding face,

said optical member being configured such that a light beam emitted from said light source is illuminated on the recording face through said objective lens and the reflected light beam reflected by the recording face is received by said light receiving element through said objective lens, and

said optical member is provided in a state wherein said optical member closely contacts with said light source, objective lens and light receiving element without a gap left therebetween.

16. The optical disk apparatus according to claim 15 wherein, said optical member is in the form of a rectangular plate and is attached at one of two mutually opposing faces thereof to said substrate while said objective lens is attached to the other of the two mutually opposing faces of said optical member, and said light source is attached to a face of said optical member perpendicular to the one face and the other face.

17. The optical disk apparatus according to claim 15 wherein, said light source is attached to said substrate, and a surface of said light source which is exposed to the outside while said light source is

attached to said optical member is covered with anticorrosion means for blocking the surface from the external air.

18. The optical disk apparatus according to claim 17 wherein, said anticorrosion means is made of a synthetic resin material.

19. The optical disk apparatus according to claim 17 wherein, said light source includes a light emitting element for emitting the light beam, a photo-detector for monitoring the light beam emitted from said light emitting element, and a mount member attached to said substrate and having said light emitting element and said photo-detector mounted thereon, that surfaces of said light emitting element, photo-detector and mount member which are exposed to the outside while said mount member is attached at a lower face thereof to said substrate and the light emitting face of said light emitting element and a front face of said mount member are attached to said optical member are covered with said anticorrosion means, and that said anticorrosion means is formed from a transparent synthetic resin material through which the light beam emitted from said light emitting element can pass.

20. The optical disk apparatus according to claim

19 wherein, connection terminals for inputting a driving signal are provided on said light emitting element while electric terminals for relaying the driving signal are provided on said substrate, and said connection terminals and said electric terminals are covered with said anticorrosion means.

21. The optical disk apparatus according to claim 15 wherein, said objective lens is provided integrally with an objective lens plate, and said objective lens plate is attached at one face thereof to said optical pickup body while said slider is attached to the other face of said objective lens plate.

22. The optical disk apparatus according to claim 15 wherein, said optical pickup apparatus comprises a resiliently deformable support plate in the form of a small-width plate having said optical pickup attached to an end in a longitudinal direction thereof, and said support plate has a thermal conductivity and a heat radiating property.

23. The optical disk apparatus according to claim 22 wherein, said support plate has a heat radiating fin provided thereon in a projecting manner in a direction in which said radiating fin approaches the recording face.

24. The optical disk apparatus according to claim

22 wherein, said support plate is made of a material of copper or iron which has copper plated thereon.

25. The optical disk apparatus according to claim 22 wherein, said optical pickup apparatus further comprises a resiliently deformable load beam in the form of a small-width plate having said support plate attached to one end in a longitudinal direction thereof, and said load beam transmits and radiates heat from said light source rapidly.

26. The optical disk apparatus according to claim 25 wherein, said load beam has a heat radiating fin provided in a projecting manner in a direction in which said load beam approaches the recording face.

27. The optical disk apparatus according to claim 25 wherein, said load beam is made of a material of copper or iron which has copper plated thereon.

28. The optical disk apparatus according to claim 25 wherein, a gap is formed between said support plate and said load beam and filled with grease for transmission of heat.

29. An optical pickup apparatus comprising:

an optical pickup including an optical pickup body having a substrate, a light source attached to said substrate, a light receiving element attached to said

substrate and an optical member attached to said substrate, and an objective lens and a slider attached to said optical pickup body; and

a resiliently deformable support plate in the form of a small-width plate having said optical pickup attached to an end in a longitudinal direction thereof; wherein

said optical pickup is configured such that said slider is opposed to a recording face of an optical disk and said optical pickup is levitated following up the recording face of the optical disk by an air flow formed between said slider and the recording face, and

said support plate has a thermal conductivity and a heat radiating property.

30. The optical pickup apparatus according to claim 29 wherein, said support plate has a heat radiating fin provided thereon in a projecting manner in a direction in which said radiating fin approaches the recording face.

31. The optical pickup apparatus according to claim 29 wherein, said support plate is made of a material of copper or iron which has copper plated thereon.

32. The optical pickup apparatus according to

claim 29, wherein said optical pickup apparatus further comprises a resiliently deformable load beam in the form of a small-width plate having said support plate attached to one end in a longitudinal direction thereof, and said load beam transmits and radiates heat from said light source rapidly.

33. The optical pickup apparatus according to claim 32 wherein, said load beam has a heat radiating fin provided in a projecting manner in a direction in which said load beam approaches the recording face.

34. The optical pickup apparatus according to claim 32 wherein, said load beam is made of a material of copper or iron which has copper plated thereon.

35. The optical pickup apparatus according to claim 32 wherein, a gap is formed between said support plate and said load beam and filled with grease for transmission of heat.

36. An optical disk apparatus comprising:
driving means for holding and driving an optical disk to rotate; and

an optical pickup apparatus for illuminating light on the optical disk driven to rotate by said driving means and detecting reflected light from the optical disk;

said optical pickup apparatus including:

an optical pickup including an optical pickup body having a substrate, a light source attached to said substrate, a light receiving element attached to said substrate and an optical member attached to said substrate, and an objective lens and a slider attached to said optical pickup body, and

a resiliently deformable support plate in the form of a small-width plate having said optical pickup attached to an end in a longitudinal direction thereof, wherein

said optical pickup being configured such that said slider is opposed to a recording face of an optical disk and said optical pickup is levitated following up the recording face of the optical disk by an air flow formed between said slider and the recording face, and

said support plate has a thermal conductivity and a heat radiating property.

37. The optical disk apparatus according to claim 36 wherein, said support plate has a heat radiating fin provided thereon in a projecting manner in a direction in which said radiating fin approaches the recording face.

38. The optical pickup apparatus according to claim 36 wherein, said support plate is made of a

material of copper or iron which has copper plated thereon.

39. The optical pickup apparatus according to claim 36 wherein, said optical pickup apparatus further comprises a resiliently deformable load beam in the form of a small-width plate having said support plate attached to one end in a longitudinal direction thereof, and said load beam transmits and radiates heat from said light source rapidly.

40. The optical pickup apparatus according to claim 39 wherein, said load beam has a heat radiating fin provided in a projecting manner in a direction in which said load beam approaches the recording face.

41. The optical pickup apparatus according to claim 39 wherein, said load beam is made of a material of copper or iron which has copper plated thereon.

42. The optical pickup apparatus according to claim 39 wherein, a gap is formed between said support plate and said load beam and filled with grease for transmission of heat.